

## **REMARKS**

In the Office Action, the previous indication of allowability of claims 10 and 40 was withdrawn; and claims 1-48 were rejected. Claims 32, 33 and 49-94 were previously canceled without prejudice.

By this Reply and Amendment, claims 2-6, 11, 14-16, 21 and 22 have been amended, claims 12, 13 and 42 have been canceled without prejudice, and claims 1-11, 14-31, 34-41 and 43-48 remain pending in the present application. All claim amendments are fully supported throughout the specification. No new matter has been added.

In the Office Action, claims 12-15 were objected to based on certain informalities. Claims 12, 13 have been canceled without prejudice, and claims 14, 15 have been amended to clarify their antecedent basis. Accordingly, the objection is believed no longer applicable.

In the Office Action, claims 12 and 42 were objected to under 37 CFR 1.75(c). However, this objection is believed to be moot in light of the cancellation of claims 12 and 42 without prejudice.

Claims 1-9, 11-14, 16-39 and 42-48 were rejected under 35 USC 102(b) as anticipated by the C.K. Woodrow (SPE/IADC 67729) article. The rejection is respectfully but strongly traversed. However, independent claim 22 has been amended to clarify the claim language.

In the Office Action, conclusory assertions were made with respect to the teachings of the SPE/IADC 67729 article, but Applicant respectfully submits the cited article supports neither those assertions nor the rejection under 35 USC 102(b). The SPE/IADC 67729 article describes a conventional distributed temperature sensor system in which an optical fiber is pumped into a control line deployed in a wellbore. (See Principal of Operation section, first paragraph). The system described, however, produces raw data to a surface unit as with other conventional systems. The data is not automatically processed to improve the usefulness of the data to an

operator, as in the subject claims. In fact, the SPE/IADC 67729 teaches directly against the presently claimed system and methodology by stating that the temperature data obtained from the distributed temperature system can be displayed on-site, stored or transmitted "to office based engineers" for interpretation. (See Principal of Operation section, final paragraph). Accordingly, the cited article fails to disclose or suggest numerous elements of the rejected claims, and therefore the rejection is unsupported.

By way of example, the SPE/IADC 67729 article fails to disclose or suggest "automatically determining whether fluids are flowing into or out of a tubing located in the well by processing the temperature profile data" as recited in independent claim 1. The reference also fails to disclose or suggest a system that comprises "a processor that receives the temperature profile data in real time" with the processor "programmed to identify a particular temperature signal that corresponds to a specific downhole event having an inflow of relatively cooler fluid" followed by outputting valuable information related to the downhole event, as recited in amended, independent claim 22. Similarly, the reference also fails to disclose or suggest "automatically processing the data to detect specific events related to heat energy in the well" and further "automatically processing the data to determine a flow rate of fluid in the well" as recited in independent claim 31. Accordingly, the rejection under 35 USC 102(b) is unsupported and should be withdrawn.

Remaining dependent claims 2-9, 11, 14, 16-21, 23-30, 34-39 and 43-48 ultimately depend from one of the independent claims discussed above and recite additional elements. Accordingly, the rejection of these dependent claims under 35 USC 102(b) also is unsupported and should be withdrawn.

Claims 10 and 40 were rejected under 35 USC 103(a) as being unpatentable over the SPE/IADC 67729 article in view of the Riza reference, US Patent No: 6,360,037. This rejection is respectfully traversed. The combination of references fails to disclose numerous elements of the subject claims, and therefore no prima facie case of obviousness has been established.

The SPE/IADC 67729 article is relied on as teaching the elements of claims 10, 40, although the article is said to fail in explicitly teaching construction of a match filter comprising incorporating modifications to the filter to make it orthogonal to background trends. The Riza reference is relied on for these teachings. As discussed above, however, the SPE/IADC 67729 article fails to disclose or suggest the unique approach of automatically processing data to enable and improve its usefulness to an operator. The Riza reference also fails to disclose or suggest these missing elements.

By way of example, the SPE/IADC 67729 article and the Riza reference, taken alone or in combination, fail to disclose, teach or suggest "automatically processing the temperature profile data to highlight valuable information to a user" wherein the automatic processing comprises "applying a model-fitting algorithm to the data" as recited in independent claim 10. Similarly, the references fail to disclose, teach or suggest "automatically processing the data to detect specific events related to heat energy in the well" wherein the automatic processing comprises "applying a model-fitting algorithm to the data and applying the model-fitting algorithm comprises constructing a match filter and using extrema of a convolution of the filter with data to select candidate depths" as recited in independent claim 40. Accordingly, no prima facie case of obviousness has been established, and the rejection should be withdrawn.

Claim 15 was rejected under 35 USC 103(a) as being unpatentable over the SPE/IADC 67729 article. This rejection is respectfully traversed, however claim 15 directly depends from independent claim 1. Accordingly, the rejection of claim 15 under 35 USC 103(a) is unsupported for the reasons provided above with respect to claim 1. The SPE/IADC 67729 article does not establish prima facie obviousness, and the rejection should be withdrawn.

Claim 41 was rejected under 35 USC 103(a) as being unpatentable over the SPE/IADC 67729 article in view of the Tubel reference, US Patent No.: 6,012,015. This rejection is respectfully traversed, however claim 41 directly depends from independent claim 31. Accordingly, the rejection of claim 41 under 35 USC 103(a) is unsupported for the reasons provided above with respect to claim 31. Addition of the Tubel reference does not obviate the

deficiencies of the SPE/IADC 67729 article to establish a prima facie case of obviousness, and the rejection should be withdrawn.

In view of the foregoing remarks, all pending claims are believed to be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. A. Van Someren', written over a horizontal line.

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